REMARKS

Claims 1 and 4-22, as amended, remain herein. Claims 1 and 4-16 have been amended for clarity. New claim 22 has been added. Support for the new claim may be found throughout the specification (see, e.g., FIG. 1 and page 15, lines 23-30 of the specification).

Applicants thank the Examiner for the telephonic interview conducted on August 12, 2009. During the Interview, applicants' representative argued the patentability of the claims over the cited prior art. The arguments made during the interview are included in the remarks below herein.

1. Claims 1, 4, 7-10 and 12-18 were rejected under 35 U.S.C. § 103(a) over Isayev U.S. Patent 5,284,625 and Schembri U.S. 5,403,415.

Applicants' claim 1 recites an apparatus for applying ultrasonic vibration to a molten resin material, the apparatus comprising: a vibrator for applying ultrasonic vibration to a resin material, or a vibration transmission member for transmitting vibration of the vibrator to a resin material, wherein the vibrator or the vibration transmission member has high adhesive properties to the resin material, the vibrator or the vibration transmission member is located in a channel for flowing molten resin material, to come in contact with the resin material and the vibrator or the vibration transmission member is positioned to transmit vibration in a direction perpendicular to a flow direction of the flowing molten resin material; and vibration transmission inhibition means positioned to substantially inhibit members other than the resin material from being vibrated by the vibration of the vibrator or the vibration transmission member.

The Office Action admits that Isayev fails to disclose a vibrator or a vibration transmission member having high adhesive properties to a resin material, as recited in applicants' claim 1. Schembri does not teach or suggest what is missing from Isayev. First, Schembri relates to ultrasonic welding of thermoplastic parts, not to extrusion or injection molding. In addition, Schembri uses a patterned horn to reduce energy transmission and to prevent over-welding:

> As discussed in the background above, use of a flat energy-applying surface can result in uneven welding of the thermoplastic parts to be joined, i.e., some regions can be "over-welded" resulting in excess plastic flow and other regions can be "under-welded" resulting in inadequate bonding. In order to promote uniform welding of the thermoplastic parts, the raised coplanar region(s) of the energy-applying surface of the ultrasonic horn will be formed in a pattern which affects energy transmission from the horn to the parts in a manner which lessens over-welding and/or reduces under-welding. In particular, target areas on the first thermoplastic part are identified where over-welding i.e., excess plastic flow, occurs. The raised surface is patterned to avoid contact with these areas, allowing more energy to be delivered to under-welded areas where direct contact is maintained. In some cases, it will be desirable to have certain coplanar regions which are raised higher than others in order to further focus energy at regions needing more energy, e.g. regions with a high density of energy directors. For example, when welding an analytical rotor comprising two circular parts having cuvettes located at the periphery, the raised surface may be patterned to avoid contacting the periphery. The interior may be further patterned to have higher raised surfaces to contact areas with a high density of energy directors.

Schembri, column 3, lines 3-29 (emphasis added here).

A person of ordinary skill in this art would not combine the horn of Schembri with the apparatus of Isayev. Isayev attempts to break the three-dimensional network of vulcanized elastomer by applying ultrasonic energy directly to the elastomer (see Isayev at Abstract and FIG. 1). On the other hand, Schembri uses a patterned horn to avoid direct contact at specific welding areas and to minimize ultrasonic energy transmission in those areas.

Applicants' claimed apparatus does not avoid direct contact between the vibrator or the vibration transmission member and the resin material, but a patterned surface of the vibrator or the vibration transmission member has the unexpected effect of increasing the adhesive properties of the vibrator or the vibration transmission member to the resin material and results in high quality molded articles having superior mechanical properties (see page 4, lines 8-25; and page 6, line 28 to page 7, line 4 of applicants' specification). Evidence that the claimed invention yields unexpectedly improved properties or properties not present in the prior art rebuts an obviousness rejection. See In re Dillon, 919 F.2d 688, 692-93 (Fed. Cir. 1990); MPEP § 2145.

Schembri says nothing about increasing the adhesive properties of the horn to the resin material and the raised regions of Schembri's horn are not even in contact with the resin material. Thus, a person of ordinary skill in the art would not be motivated to use Schembri's horn in an apparatus for extrusion or injection molding. The Office Action's conclusion of obviousness is based on improper hindsight reasoning as there is no motivation to combine the cited references. See MPEP § 2145.

Thus, neither Isayev nor Schembri discloses all elements of applicants' claims. In addition, Isayev and Schembri disclose nothing that would have suggested applicants' claimed invention to one of ordinary skill in the art. There is no disclosure or teaching in any of Isayev, Schembri, or otherwise in this record, that would have suggested the desirability of modifying any portions thereof effectively to anticipate or suggest applicants' presently claimed invention. Applicants respectfully request reconsideration and withdrawal of this rejection.

2. Claims 1, 4, 5, 7, 9, 10, 12 and 15-18 were rejected under 35 U.S.C. § 103(a) over Allan U.S. Patent Application Publication 2006/0165832 and Schembri. The Office Action admits that Allan fails to disclose "the vibrator or the vibration transmission member has high adhesive properties to the resin material," as recited in applicants' claim 1. As discussed above, Schembri does not teach or suggest what is missing from Allan.

Nor would it have been obvious to one of ordinary skill in this art to modify or combine Allan and Schembri to provide every element of applicants' claim 1. As discussed above, Schembri's horn is shaped to enhance energy transfer in certain areas and to avoid direct contact and energy transfer in other areas. One of ordinary skill in this art would not use Schembri's horn to apply vibrations to molten resin, as recited in applicants' claim 1.

Thus, neither Allan nor Schembri discloses all elements of applicants' claims. In addition, Allan and Schembri disclose nothing that would have suggested applicants' claimed invention to one of ordinary skill in the art. There is no disclosure or teaching in any of Allan, Schembri, or otherwise in this record, that would have suggested the desirability of modifying any portions thereof effectively to anticipate or suggest applicants' presently claimed invention. Applicants respectfully request reconsideration and withdrawal of this rejection.

3. Claim 6 was rejected under 35 U.S.C. § 103(a) over Isayev or Allan in view of Schembri. For the reasons stated above, Allan, Isayev, and Schembri fail to render obvious applicants' claim 1, from which claim 6 depends. Applicants respectfully request reconsideration and withdrawal of this rejection.

4. Claim 11 is rejected over Isayev or Allan in view of Schembri and Rice U.S. Patent 5,269,860. As discussed above, Allan, Isayev and Schembri fail to disclose or suggest every element of applicants' claim 1, from which claim 11 depends. Rice fails to disclose what is missing from Allan, Isayev and Schembri. Rice discloses an apparatus for ultrasonic welding. Rice fails to disclose improving the mechanical properties of a resin material. Rice explains that ultrasonic energy is easily transmitted through amorphous resins (see Rice, column 2, lines 64-67), but there is nothing in Rice suggesting the use of a vibrator or a vibration transmission member having high adhesive properties to a resin material. In Rice, the amorphous resin is bonded to another material, but the vibrator itself is not modified to have high adhesive properties to the resin material.

Thus, none of Isayev, Allan, Schembri, and Rice discloses all elements of applicants' claims. In addition, Isayev, Allan, Schembri, and Rice disclose nothing that would have suggested applicants' claimed invention to one of ordinary skill in the art. There is no disclosure or teaching in any of Isayev, Allan, Schembri, Rice, or otherwise in this record, that would have suggested the desirability of modifying any portions thereof effectively to anticipate or suggest applicants' presently claimed invention. Applicants respectfully request reconsideration and withdrawal of this rejection.

5. Claim 19 was rejected under 35 U.S.C. § 103(a) over Isayev or Allan, in view of Schembri and Hansen U.S. Patent 3,971,315.

As discussed above, none of Isayev, Allan or Schembri discloses all elements of applicants' claim 1, from which claim 19 depends. Hansen does not teach or suggest what is missing from Allan, Isayev and Schembri.

Thus, none of Isayev, Allan, Schembri, and Hansen discloses all elements of applicants' claims. In addition, Isayev, Allan, Schembri, and Hansen disclose nothing that would have suggested applicants' claimed invention to one of ordinary skill in this art. There is no disclosure or teaching in any of Isayev, Allan, Schembri, Hansen, or otherwise in this record, that would have suggested the desirability of modifying any portions thereof effectively to anticipate or suggest applicants' presently claimed invention. Applicants respectfully request reconsideration and withdrawal of this rejection.

6. Claim 20 was rejected under 35 U.S.C. § 103(a) over Isayev or Allan, in view of Schembri and Takubo U.S. Patent 4,863,653.

As discussed above, Isayev, Allan, and Schembri fail to disclose every element of applicants' claim 1, from which claim 20 depends. Takubo does not teach or suggest what is missing from Allan, Isayev and Schembri. Takubo does not disclose a vibrator or a vibration transmission member having high adhesive properties to a resin material.

Thus, none of Isayev, Allan, Schembri, and Takubo discloses all elements of applicants' claims. In addition, Isayev, Allan, Schembri, and Takubo disclose nothing that would have suggested applicants' claimed invention to one of ordinary skill in this art. There is no disclosure or teaching in any of Isayev, Allan, Schembri, Takubo, or otherwise in this record, that would have suggested the desirability of modifying any portions thereof effectively to

anticipate or suggest applicants' presently claimed invention. Applicants respectfully request reconsideration and withdrawal of this rejection.

7. Claim 21 was rejected under 35 U.S.C. § 103(a) over Isayev or Allan, in view of Schembri and Rabeneck U.S. Patent 4,289,569.

As discussed above, Isayev, Allan, and Schembri fail to disclose every element of applicants' claim 1, from which claim 21 depends. Rabeneck does not teach or suggest what is missing from Allan, Isayev and Schembri. Rabeneck does not disclose a vibrator or a vibration transmission member having high adhesive properties to a resin material.

Thus, none of Isayev, Allan, Schembri, and Rabeneck discloses all elements of applicants' claims. In addition, Isayev, Allan, Schembri, and Rabeneck disclose nothing that would have suggested applicants' claimed invention to one of ordinary skill in this art. There is no disclosure or teaching in any of Isayev, Allan, Schembri, Rabeneck, or otherwise in this record, that would have suggested the desirability of modifying any portions thereof effectively to anticipate or suggest applicants' presently claimed invention. Applicants respectfully request reconsideration and withdrawal of this rejection.

Accordingly, this application is now fully in condition for allowance and a notice to that effect is respectfully requested. The PTO is hereby authorized to charge/credit any fee deficiencies or overpayments to Deposit Account No. 19-4293 (Order No. 28955.1062). If further amendments would place this application in even better condition for issue, the Examiner is invited to call applicants' undersigned attorney at the number listed below.

Respectfully submitted,

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